

What is claimed is:

1. An apparatus for detecting chemical substances comprising: an ion source ionizing a sample, an analysis region measuring an ion species of said sample, and a data processor determining the presence of absence of a target chemical substance to be detected in said sample based on the analysis result of said ion species, wherein said data processor determines the detection or non-detection of an ion generated by reaction of a molecule of said target chemical substance with a molecule of an organic acid or an organic acid salt having a mass number of 40 to 400.

2. The apparatus for detecting chemical substances according to Claim 1, wherein said organic acid or said organic acid salt is an organic acid or an organic acid salt having a hydroxyl group or a carboxyl group, or a lactic acid or a lactate.

3. The apparatus for detecting chemical substances according to claim 1, wherein said data processor determines the detection or non-detection of said generated ion, or the detection or non-detection of an ion generated by reaction of a molecule generated from said organic acid or said organic acid salt with a molecule of said target chemical substance to determine the presence or absence of said target chemical substance.

4. The apparatus for detecting chemical

substances according to Claim 1; wherein said data processor determines one or more of the detection or non-detection of an ion generated from said target chemical substance, the detection or non-detection of said generated ion, and the detection or non-detection of an ion generated by reaction of a molecule generated from said organic acid or said organic acid salt with a molecule of said target chemical substance to determine the presence or absence of said target chemical substance.

5. The apparatus for detecting chemical substances according to Claim 1, wherein tandem mass analysis is performed on said generated ion, and said data processor determines the detection or non-detection of a fragment ion of said generated ion to determine the presence or absence of said target chemical substance.

6. The apparatus for detecting chemical substances according to Claim 1, wherein tandem mass analysis is performed on an ion generated by reaction of a molecule generated from said organic acid or said organic acid salt with a molecule of said target chemical substance, and said data processor determines the detection or non-detection of a fragment ion of said generated ion to determine the presence or absence of said target chemical substance.

7. The apparatus for detecting chemical substances according to Claim 1, wherein tandem mass

analysis is performed simultaneously on one or more of an ion generated from said target chemical substance, said generated ion, and an ion generated by reaction of a molecule generated from said organic acid or said organic acid salt with a molecule of said target chemical substance, and said data processor determines the detection or non-detection of a fragment ion of an ion generated from said target chemical substance and the detection or non-detection of a fragment ion of said generated ion to determine the presence or absence of said target chemical substance.

8. An apparatus for detecting chemical substances comprising: a heating unit for generating a sample gas, a gas generator for generating a gas of an organic acid or an organic acid salt having a mass number of 40 to 400, a gas mixer for mixing the gas of said organic acid or said organic acid salt with said sample gas generated by said heating unit to generate a mixed gas, a mass analysis region for obtaining a mass spectrum of an ion of said mixed gas, and a data processor for determining the presence or absence of a target chemical substance to be detected in said sample based on said mass spectrum, wherein said data processor determines the detection or non-detection of an ion generated by reaction of a molecule of said target chemical substance with a molecule of said organic acid or said organic acid salt to determine the presence or absence of said target chemical

substance.

5 9. An apparatus for detecting chemical substances comprising: an introduction region for introducing a sample gas, a gas generator for
10 generating a gas of an organic acid or an organic acid salt having a mass number of 40 to 400, a gas mixer for mixing the gas of said organic acid or said organic acid salt with said sample gas introduced by said
15 introduction region to generate a mixed gas, a mass analysis region for obtaining a mass spectrum of an ion of said mixed gas, and a data processor for determining the presence or absence of a target chemical substance to be detected in said sample gas based on said mass spectrum, wherein said data processor determines the
20 detection or non-detection of an ion generated by reaction of a molecule of said target chemical substance with a molecule of said organic acid or said organic acid salt to determine the presence or absence of said target chemical substance.

25 10. An apparatus for detecting chemical substances comprising: wipe materials dipped with an organic acid or an organic acid salt having a mass number of 40 to 400 to extract a sample from a detection target, a heating unit for heating the wipe materials to generate a mixed gas obtained by mixing a gas of said organic acid or said organic acid salt with a gas of said sample, a mass analysis region for obtaining a mass spectrum of an ion of said mixed gas,

and a data processor for determining the presence or absence of a target chemical substance to be detected in said sample based on said mass spectrum, wherein said data processor determines the detection or non-detection of an ion generated by reaction of a molecule of said target chemical substance with a molecule of said organic acid or said organic acid salt to determine the presence or absence of said target chemical substance.

10 11. A method for detecting chemical substances comprising the steps of: ionizing a sample, analyzing an ion species of said sample, and determining the detection or non-detection of an ion generated by reaction of a molecule of said target chemical
15 substance with a molecule of an organic acid or an organic acid salt having a mass number of 40 to 400 based on the analysis result of said ion species to determine the presence or absence of said target chemical substance.

20 12. A method for detecting chemical substances comprising the steps of: generating a sample gas, mixing a gas of an organic acid or an organic acid salt having a mass number of 40 to 400 with said sample gas to generate a mixed gas, ionizing said mixed gas,
25 obtaining a mass spectrum of an ion of said mixed gas, and determining the detection or non-detection of an ion generated by reaction of a molecule of said target chemical substance with a molecule of said organic acid

or said organic acid salt to determine the presence or absence of said target chemical substance.